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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,090	06/28/2001	James Zu-Chia Teng	IBM 2 0007SVL920010011US1	5345

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EXAMINER	
GODDARD, BRIAN D	

ART UNIT	PAPER NUMBER
2171	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,090	TENG ET AL.	
	Examiner	Art Unit	
	Brian Goddard	2171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-9,11-13 and 15-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9,11-13 and 15-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This communication is responsive to Amendment A, filed 13 November 2003.

2. Claims 1, 3-9, 11-13 and 15-18 are pending in this application. Claims 1, 7, 11 and 15 are independent claims. In Amendment A, claims 2, 10 and 14 were cancelled, and claims 1, 3, 7, 8, 11 and 16-18 were amended. This action is made Final.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 3-9, 11-13 and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,363,387 to Ponnekanti et al.

Referring to claim 1, Ponnekanti discloses a database management system for managing a database as claimed. See Figures 1-3 and the corresponding portions of Ponnekanti's specification for this disclosure. In particular, Ponnekanti teaches "a database management system [See Fig. 1] for managing a database application [170], the database application including a database having at least one table [250 (See e.g. Column 3, lines 7-21)], and an index [245] having at least one unique key index table [See column 7, line 52 – column 9, line 60] corresponding to the at least one table, the DBMS comprising:

a data manager [268 - 269] for managing updates of the database;

an index manager [See column 12, line 3 et seq.] for managing updates of the unique key table index;

a transaction manager [260] for executing database transactions in cooperation with the data manager and the index manager [See Fig. 2A & corresponding portion of the specification]; and

a lock manager [See column 11, line 57 et seq.] cooperative with the index manager and the data manager for restricting access to a first table element [row] of said at least one table by assigning one or more locks [locks & latches] thereto, said locks being selected from a plurality of lock types including at least,

an exclusive X-lock [EXCLUSIVE lock] that enables exclusive access to the first table element [See column 10, line 52 – column 11, line 29], the exclusive X-lock including a Delete X-lock attribute [ROW_DELETE status bit] associated therewith, a SET state of the Delete X-lock attribute being indicative of a transaction holding the X-lock being a delete transaction [See column 12, lines 34-64];

an unconditional [See columns 11-12] S-lock [SHARED lock] that enables shared access to the first table element and is selectively assigned by the lock manager to the first table element only when the first table element is without an exclusive X-lock previously assigned thereto [See column 11, lines 36-41]; and

a conditional [See columns 11-12] S-lock [SHARED lock] that enables shared access to the first table element and is selectively assigned by the lock manager [grants the "lock" or "lock_instant" request] to the first table element only when the first

table element is either without an exclusive X-lock previously assigned thereto [See column 11, lines 45-48] or is without an exclusive X-lock having its Delete X-lock attribute SET assigned thereto [See TABLE 1]" as claimed.

Referring to claim 3, Ponnekanti discloses the DBMS as claimed. See column 12, lines 34-64 for the details of this disclosure. In particular, Ponnekanti teaches the DBMS as set forth in claim 1, "wherein:

the unique key index table further includes a pseudo-delete flag [ROW_DELETE bit] corresponding to each key entry of the unique key index table [See column 12, lines 58-64]; and

the index manager selectively SETs the pseudo-delete flag to indicate deletion of a table row corresponding to the index key entry [See column 12, lines 34-64]" as claimed.

Referring to claim 4, Ponnekanti discloses the DBMS as claimed. See Figure 3 and the corresponding portion of Ponnekanti's specification for this disclosure. In particular, Ponnekanti teaches the DBMS as set forth in claim 3, "wherein in response to receiving a request from the index manager to enter an index key entry and a corresponding new row identification RID [table scan (301) for an insert or update] in which the index key entry corresponds to an existing index key entry whose pseudo-delete flag SET [Index ROW_DELETE bit is set], the index manager is operative to:

request a Conditional S-lock [lock or lock_instant request (See Steps 321-327)] on the table row corresponding to the existing index key entry; and

conditional upon the Conditional S-lock on the table row corresponding to the existing index key entry being granted by the lock manager ["lock" or "lock_instant" succeeds (See TABLE 1 & column 13, lines 38-42)], update the table index key entry with the new row identification RID [See column 11, line 65 – column 12, line 2 and column 15, line 61 et seq.], release the Conditional S-lock on the table row corresponding to the existing index key entry [See column 14, line 29 et seq.], and reset the pseudo-delete flag to an OFF state [See column 12, lines 55-57]" as claimed.

Referring to claim 5, Ponnekanti discloses the DBMS as claimed. Again, see Figure 3 and the corresponding portion of Ponnekanti's specification for this disclosure. In particular, Ponnekanti teaches the DBMS as set forth in claim 4, "wherein in response to receiving a request...[See the discussion of claim 4 above], the index manager is adapted to:

conditional upon the Conditional S-lock on the table row corresponding to the existing index key entry being denied [lock_instant request fails] by the lock manager [See column 13, lines 42-48], request an unconditional S-lock [sleeps on the lock until an unconditional lock can be granted] on the table row corresponding to the existing index key entry; and

upon granting of the unconditional S-lock...[See the discussion of claim 4 above]" as claimed.

Referring to claim 6, Ponnekanti discloses the DBMS as claimed. See Figure 3 and the corresponding portion of Ponnekanti's specification for this disclosure. In particular, Ponnekanti teaches the DBMS as set forth in claim 3, "wherein in response to

receiving a request from the index manager to enter an index key entry and a corresponding new row identification RID [table scan (301) for an insert or update] in which the index key entry corresponds to an existing index key entry whose pseudo-delete flag is NOT SET, RESET, or OFF [See Steps 311 and 313], the index manager is operative to:

request an unconditional S-lock [lock request (See Steps 321 & 325)] on the table row corresponding to the existing index key entry; and

upon granting of the unconditional S-lock...[See the discussion of claim 4 above]" as claimed.

Referring to claim 7, Ponnekanti discloses the database management method as claimed. See the discussion of claim 4 above as well as the aforementioned portions of Ponnekanti's specification for the details of this disclosure. In particular, Ponnekanti teaches "A database management method for entering a key and a new row identification RID [table scan for insert or update] into a unique key table index of a database application that uses pseudo-deletion of table index entries, comprising:

searching [table scan 301] the unique key table index for the key;

when a pseudo-deleted table index entry corresponding to the key is located during the searching step [Step 301 where Index ROW_DELETE bit is set]:

requesting a Conditional S-lock on a table row indexed by the pseudo-deleted table index entry [See claim 4], said Conditional S-lock having compatibility characteristics respective to an X-lock including:

the Conditional S-lock not being compatible with an X-lock having a Delete attribute that is SET or ON [Data Row Status = Delete or Update/delete (See TABLE 1 and the paragraph that follows)], and

the Conditional S-lock being compatible with an X-lock having a Delete attribute that is NOT SET or OFF [Data Row Status = Unset or Update (See TABLE 1 and the paragraph that follows)]; and,

conditional upon receiving an indication...[See claim 4]...and,

conditional upon not locating a table index entry corresponding to the key during the searching step [table scan fails...index entry (row) does not exist...process regular insert], updating the table index by adding the key and the new row identification RID [See e.g. column 7, line 66 – column 8, line 2]" as claimed.

Referring to claim 8, Ponnekanti discloses the database management method as claimed. See Figure 3 and the corresponding portion of Ponnekanti's specification for this disclosure. In particular, Ponnekanti teaches the method according to claim 7, "wherein the step of receiving an indication that the Conditional S-lock is granted includes the steps of:

granting the Conditional S-lock [lock or lock_instant] conditional upon the table row indexed by the pseudo-deleted table index entry not having an X-lock assigned thereto [See TABLE 1 and column 13, lines 35-40];

granting the Conditional S-lock [lock_instant] conditional upon the table row indexed by the pseudo-deleted table index entry having an X-lock assigned thereto wherein said X-lock has its Delete attribute not set, reset or off [See claim 7 above]; and

receiving an indication...[See the discussions of claims 4 & 7 above]" as claimed.

Claim 9 is rejected on the same basis as claim 5, in light of the basis for claim 8 above. See the discussions regarding claims 1-5 and 7-8 above for the details of this disclosure.

Claims 11-13 are rejected on the same basis as claims 7-9 respectively. See the discussions regarding claims 7-9 above for the details of this disclosure.

Claims 15-16 are rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claims 17-18 are rejected on the same basis as claims 3-4 respectively, in light of the basis for claim 16. See the discussions regarding claims 1 and 3-4 above for the details of this disclosure.

Response to Arguments

4. Applicant's arguments filed 13 November 2003 have been fully considered but they are not persuasive.

Referring to applicants' remarks on pages 13-14 and 20 regarding the Section 102 rejection of the independent claims: Applicants argued that Ponnekanti does not disclose a delete X-lock attribute.

The examiner disagrees for the following reasons: First, applicants appear to argue that their Delete X-lock attribute is somehow *physically or logically attached* to the X-lock itself, thus distinguishing from the Ponnekanti reference. However, it is noted that this is not claimed. Exemplary claim 1 states: "the exclusive X-lock including a

Delete X-lock attribute **associated therewith**" (emphasis added). Thus, the claims state that the Delete X-lock attribute is associated with the X-lock, NOT physically or logically attached to the X-lock. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Ponnekanti's ROW_DELETE status bit associated with each data row is equivalent to applicants' claimed Delete X-lock attribute because it is "associated with" an X-lock as claimed. Specifically, Ponnekanti teaches that any delete transaction MUST acquire an X-lock (Column 11, lines 19-22) and, once granted, must set the ROW_DELETE status bit (Column 12, lines 34-57). Thus, the ROW_DELETE status bit (Delete X-lock attribute) can only be set if an X-lock is granted to that row. The ROW_DELETE status bit is therefore "associated with" the exclusive X-lock as claimed.

Referring to applicants' remarks on pages 15-19 regarding the Section 102 rejection of independent claims 1, 7 and 11: Applicants argued that Ponnekanti does not disclose the Conditional S-lock of the present application that is granted if a conflicting X-lock has its X-lock delete attribute not set.

The examiner disagrees for the following reasons: First, it is noted that the limitation being argued in independent claim 1 is in the alternative. Thus, Ponnekanti's teaching of 'a conditional S-lock that enables shared access to the first table element and is selectively assigned by the lock manager to the first table element only when the first table element is...without an exclusive X-lock previously assigned thereto' is

sufficient to anticipate this claim limitation (the remainder of the limitation is not necessary for anticipation because it is in the alternative [either...or]).

With regard to independent claims 7 and 11 where the argument does apply, Ponnekanti's TABLE 1 and the corresponding portion of the specification teach the functionality of these claim limitations. Specifically, Ponnekanti's Conditional S-lock [method 300 (See column 13, lines 16-20 in light of column 12, lines 16-20)] is compatible with [lock is granted and row is returned (See TABLE 1)] an X-lock having a Delete attribute that is NOT SET of OFF [Data Row Status = Unset or Update, but NOT Delete or Update/delete (See TABLE 1)] as claimed. In other words, as shown in TABLE 1, if the ROW_DELETE bit is NOT SET or OFF [Data Row Status = Unset or Update], the lock is granted and the row is returned regardless of whether or not another lock (X-lock) is conflicting.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 703-305-7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

bdg
January 23, 2004

SAFET METJAHIC
SUPERVISORY PATENT EXAMINER
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